

POLYCYSTIC Ovarian Disease and ENDOMETRIOSIS



Objectives:

- Know the clinicopathologic features of endometriosis with special emphasis on: definition, typical sites and theories behind its pathogenesis.
- Understand the clinical manifestations and pathologic features of polycystic ovarian disease.

Important note: Please check out this link before viewing the file to know if there are any additions or changes. The same link will be used for all or our work: [Pathology Edit](#).

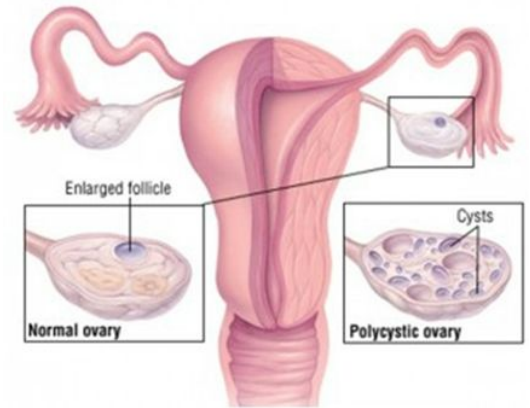
Grey = Extra
Red = Important

Polycystic Ovarian Disease (PCOD) (Stein-Leventhal syndrome)

Polycystic ovaries: are **bilateral** enlargement of ovaries by multiple small cysts, with **chronic anovulation**.

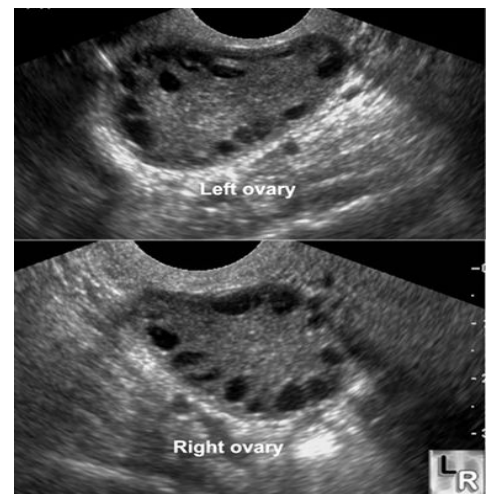
Pathophysiology:

- The initial abnormality resulting in the syndrome is *not known* but is believed to be related to **hypothalamic-pituitary dysfunction** leading to over-secretion of luteinizing hormone (LH). If LH is always high & doesn't drop → no ovulation
- High LH will stimulate theca cells to produce high amounts of androgens → androgens will be converted to estrogen in peripheral adipose tissue (women with the disease tend to be obese) → high estrogens will produce negative feedback on FSH.
- Secretion of follicle stimulating hormone (FSH) is **inhibited** resulting in suppression of ovulation with follicle cyst formation. (No FSH → No granulosa cells stimulation "shut down" → can't maintain the follicle → follicular degeneration & cyst formation).
- **High level of LH and low FSH.**

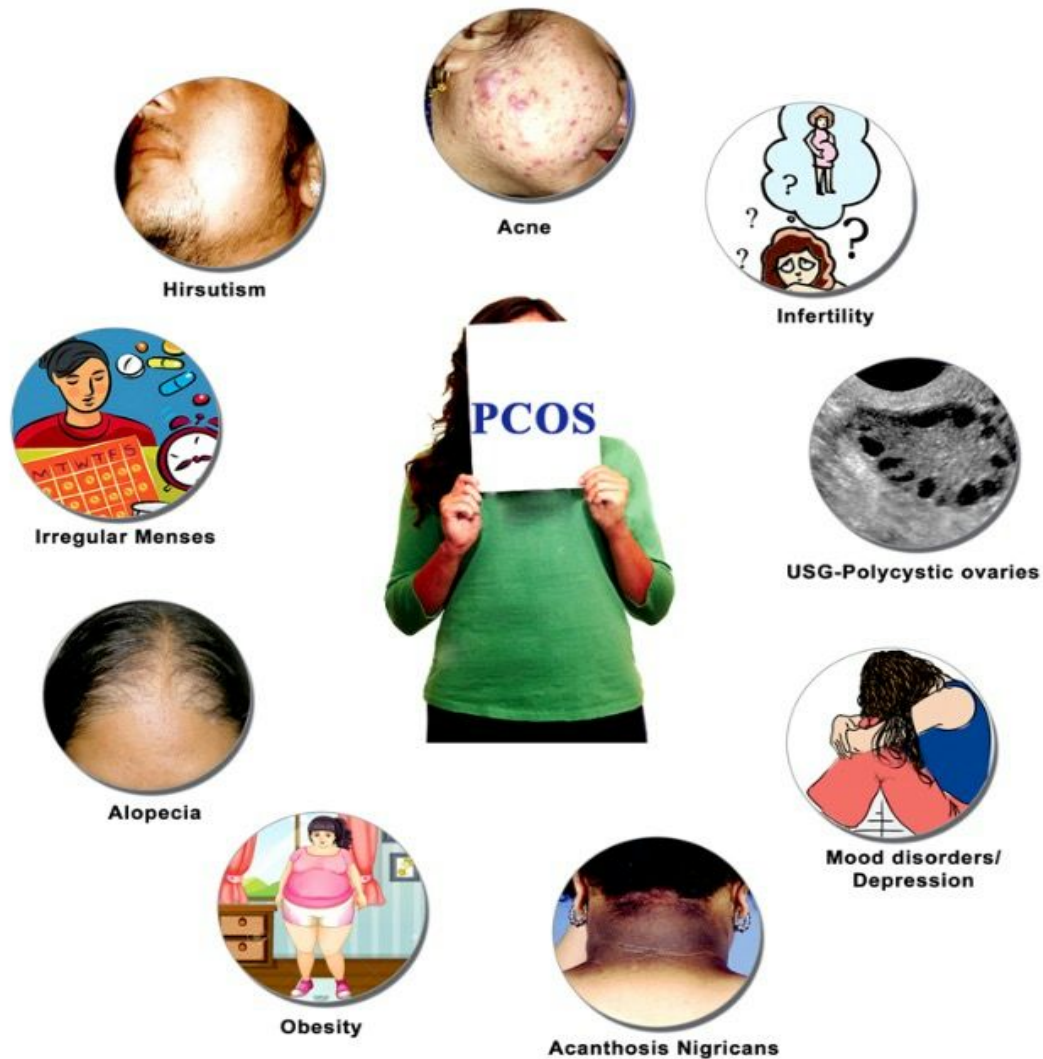


Clinical appearances: Clinical manifestations are secondary to excessive production of estrogens and androgens, mainly androgens.

- The usual clinical presentation is a **young woman** (between 15 and 30 years).
- Secondary amenorrhea with anovulation
- Oligomenorrhea ¹or irregular menses (she says am having period once every 2 or 3 months)
- Hirsutism, Acne (caused by excessive androgens).
- Virilism due to excessive amounts or effects of androgenic (masculinizing) hormones.
- Obesity.



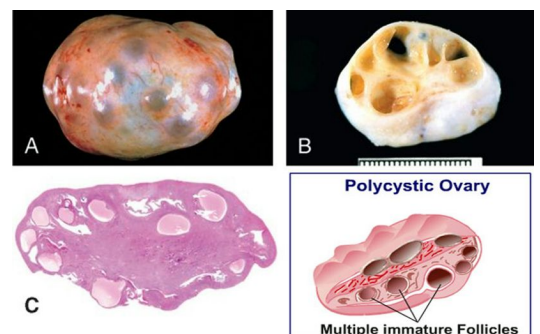
¹ A woman who regularly goes more than 35 days without menstruating may be diagnosed with **oligomenorrhea**.



Morphology:

Ovaries

- **Grossly:** 2 times the normal size with many subcortical cysts measuring 0.5 to 1.5 cm in diameter.
- **Microscopically:** the outer portion of the cortex is thickened and fibrotic (cortical stromal fibrosis) with multiple cysts underneath. The follicular cysts usually have a prominent theca interna layer.
- *Corpora lutea are frequently absent due to the anovulation.*



Endometrium:

Chronic Anovulation → Hyper-estrogenic state → endometrium show variety of appearances from mild hyperplasia → complex hyperplasia → atypia → to **endometrial adenocarcinoma**.

Women with PCOS are at risk for the following:

(doctor said **only first 4** are important for exam)

- **Endometrial hyperplasia and endometrial cancer.**
- **Insulin resistance → Type II diabetes.**
- **High blood pressure.**
- **Depression/Anxiety.**
- Dyslipidemia.
- Cardiovascular disease, Strokes.
- Weight gain.
- Miscarriage.
- Acanthosis nigricans (patches of darkened skin under the arms, in the groin area, on the back of the neck).
- Autoimmune thyroiditis.

Treatment: (dr. said not important for exam)

- Drugs that either induce ovulation (clomiphene or hCG) or regulate the menstrual cycle restores fertility.
- Reduction of ovarian volume by wedge resection of the ovaries is also successful in initiating ovulation and restoring fertility.

The endometrial changes usually regress once ovulation is achieved.

Endometriosis

Endometriosis is the presence of ectopic endometrial glands and stroma outside the uterus which is Normally found in the endometrium of the uterus.

- Like the uterine endometrium it is responsive to the hormonal variations of the menstrual cycle → bleeds during menstruation at the site of the ectopic endometrium resulting in → blood filled areas (e.g. *chocolate cysts*).
- It is **non-neoplastic** and It has been reported in men.

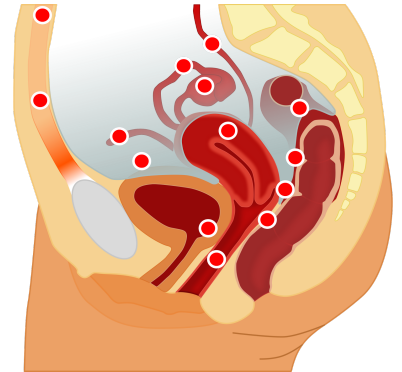
Location:

Female

- **Ovary** (approx. 50%) most frequent
- Pouch of Douglas, uterine ligaments. second most common
- Occasionally involve cervix, vagina, perineum, **bladder**, large bowel and the umbilicus.
- Small bowel, kidneys, lungs, nose and brain. (very rare)

Male

- bladder
- scrotum
- prostate



Clinical features: (depends on the site of endometriosis.)

Bleeding (menstrual-related) → Lead to inflammation (hemosiderin macrophages) → Healing by fibrosis.

- Dysmenorrhea², cyclic abdominal pain and dyspareunia³ are common symptoms.
- Usually there is severe menstrual-related pain.
- Often results in infertility. (due to fibrosis)
- If it was in ovary result in:
Repeated hemorrhage into the ovary with each menstrual cycle → produces cysts filled with chocolate-brown material called (chocolate cyst) → ovary become totally large cystic filled with chocolate brown fluid.
 - If in uterine ligaments → Pelvic pain only
 - pouch of Douglas → Pain with defecation
 - Urinary bladder → Pain with urination
 - Bowel serosa → Abdominal pain and adhesion
 - Fallopian tube → Scarring

Clinical behavior:

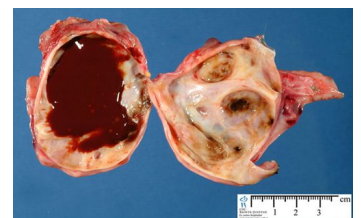
Benign with no malignant potential. **May recur** after surgical excision but the risk is low.

Gross:

- Multiple red or brown (due to hemosiderin) 1mm to 5mm nodules → some may form larger masses or cysts.
- Dense fibrous adhesions may surround the foci.

² painful menstruation, typically involving abdominal cramps.

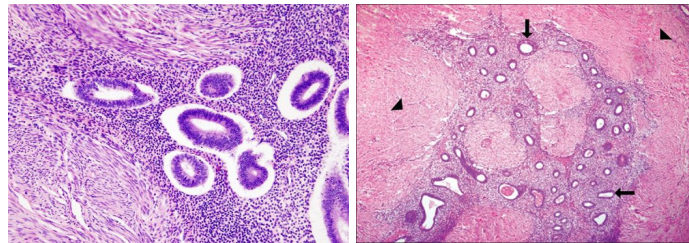
³ difficult or painful sexual intercourse.



Chocolate cyst of ovary (endometriotic cyst)

Histology

- Ectopic endometrial glands and endometrial stroma.
- Denatured blood due → previous bleeding.
- Macrophages containing hemosiderin called “siderophages” .
- When endometriosis develops in a muscular organ, the smooth muscle around it → become hyperplastic and hypertrophied.



Causes (Based on theories)

- **Regurgitation** : Menstrual back flow to fallopian tube → implantation.
- **Metaplastic** : Differentiation of endometrium of coelomic epithelium.
- **Vascular lymphatic** :this explain extraplevic implants.

Complications

- Infertility
- Adhesions
- Increased the risk of ovarian carcinoma.

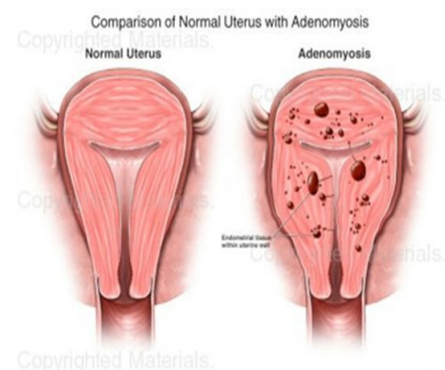
Adenomyosis

Presence of *endometrial glands* and *endometrial stroma* in the *myometrium* of the *uterus*.

- More common in the **posterior wall** than the anterior wall (but it may affect both walls in the same uterus).
- Primary disorder of **parous women** and is uncommon in the nullipara.

Histology:

- Extensive lesions → produce **myometrial thickening** with small yellow or brown cystic spaces containing fluid or blood.
- Proliferation of smooth muscle around a focus of adenomyosis → produce a tumor called adenomyoma, which resembles uterine leiomyoma.



Clinical features

- 1/3rd of the patients → Asymptomatic.
- Menorrhagia and Severe dysmenorrhea.

Clinical behavior:

- This is a benign condition with no known malignant potential that regresses after the menopause.(estrogen dependant)

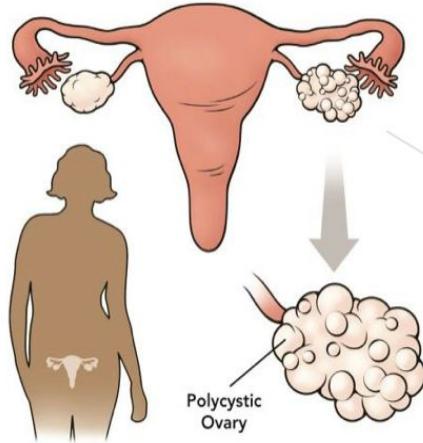
Summary

Polycystic Ovarian Disease

↑ LH ↓ FSH

Symptoms:

Obesity
Acne
Irregular Periods
Hair Loss
Depression
Ovarian Cysts
Infertility



Histology

Thickened and fibrotic cortex
subcortical cysts
prominent theca interna layer
Absent corpora lutea



COMPLICATIONS:

Endometrial hyperplasia
Insulin resistance

Cardiovascular disease
Strokes

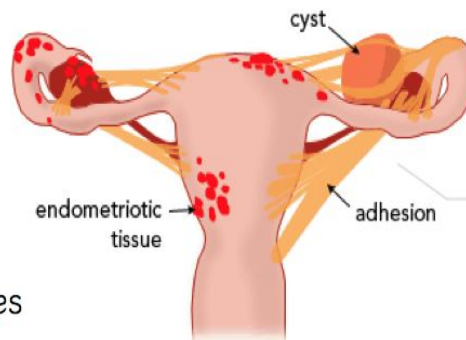
Acanthosis nigricans
Miscarriage

Endometriosis

Ectopic endometrial glands and stroma outside the uterus.

Clinical Features:

Dysmenorrhea
Cyclic abdominal pain
Dyspareunia
multiple red or brown nodules
chocolate cyst



Histology

Ectopic endometrial glands
endometrial stroma
Denatured blood
siderophages



COMPLICATIONS:

Infertility

Adhesions

Carcinoma in the site of endometriosis

MCQ's

Q1/ Which one of the following is the most common site of endometriosis?

- (A) uterine ligaments
- (B) ovary
- (C) pouch of Douglas

Q2/ A 32-year-old woman has been attempting to become pregnant for the past 2 years without success. She also has had extremely painful menstrual cramping of many years duration. An exploratory laparoscopy demonstrated multiple red-blue nodules covering the surface of her ovaries and uterine ligaments. These findings are most likely indicative of which of the following conditions?

- (A) Adenomyosis
- (B) Endometrial hyperplasia
- (C) Endometriosis

Q3/ A 20 year-old female had fairly regular menstrual cycles for several years following menarche. For the past year, she has had oligomenorrhea and developed hirsutism. She has gained about 10 Kg in the past 4 months. Each ovary is about twice normal size as seen on pelvic ultrasound, while the uterus is normal in size. Which of the following conditions is most likely to be present?

- (A) Polycystic ovaries
- (B) Endometriosis
- (C) Leiomyoma

Q4/ A presence of endometrial glands and endometrial stroma in the uterine myometrium is called?

- (A) Myometriosis
- (B) Endometriosis
- (C) Adenomyosis

Q5/ A 36 women was diagnosed with polycystic ovarian disease(POCD), Which one of the following you expect to be elevated?

- (A) LH
- (B) Alpha-fetoprotein
- (C) hCG

Answers: 1- B, 2-C, 3-A, 4-C, 5-A

For any suggestions or questions please don't hesitate to contact us on:

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Good luck!!!

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